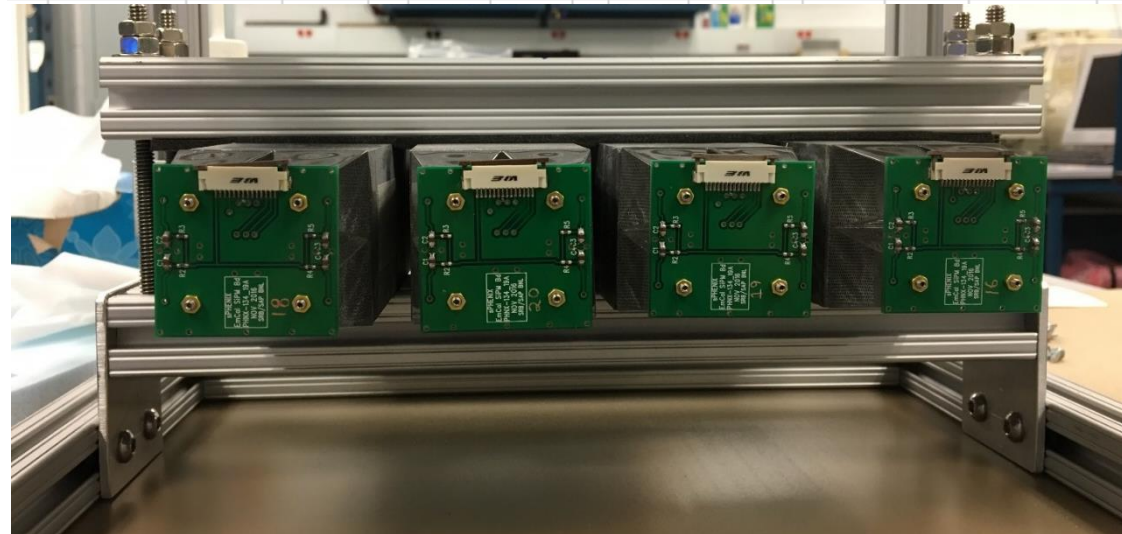


EMC4@FTBF 2/2017

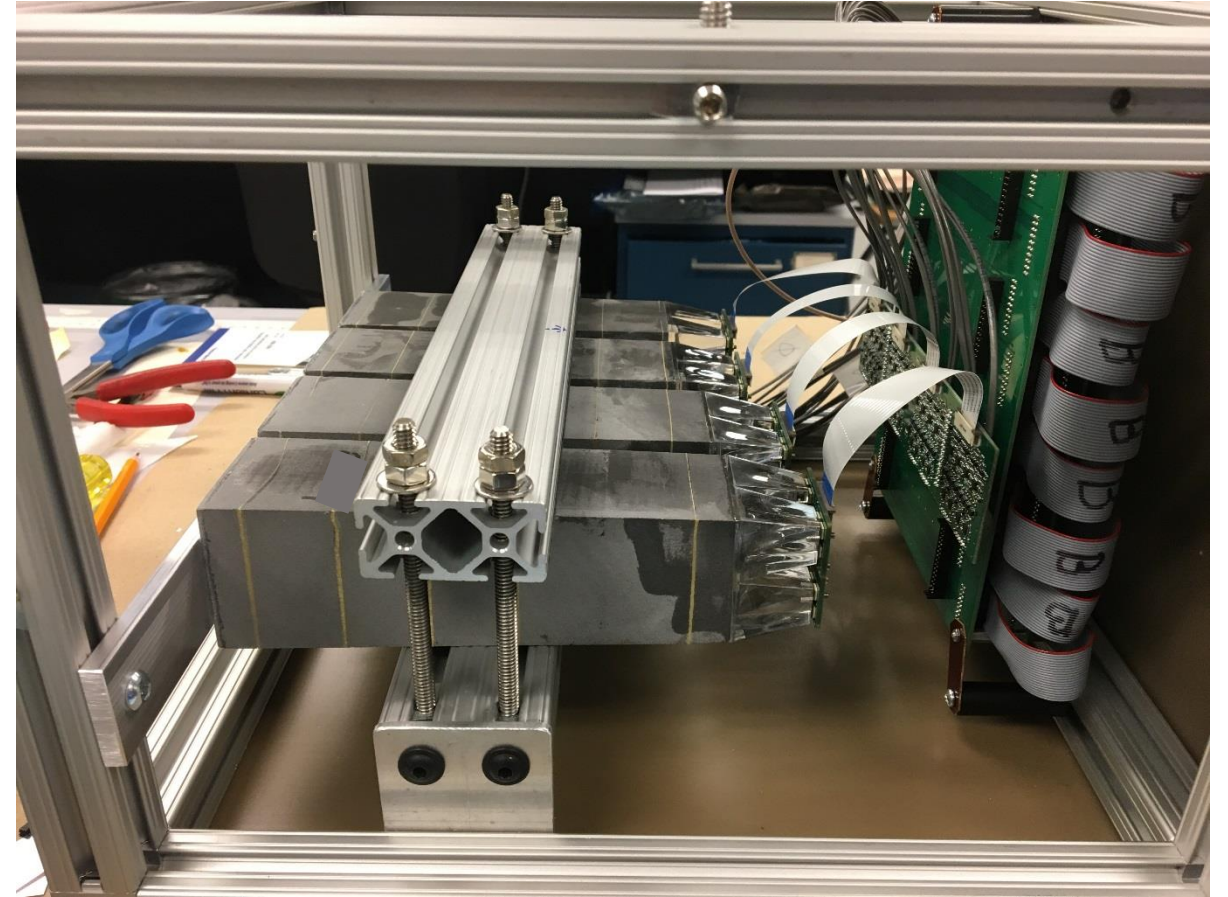
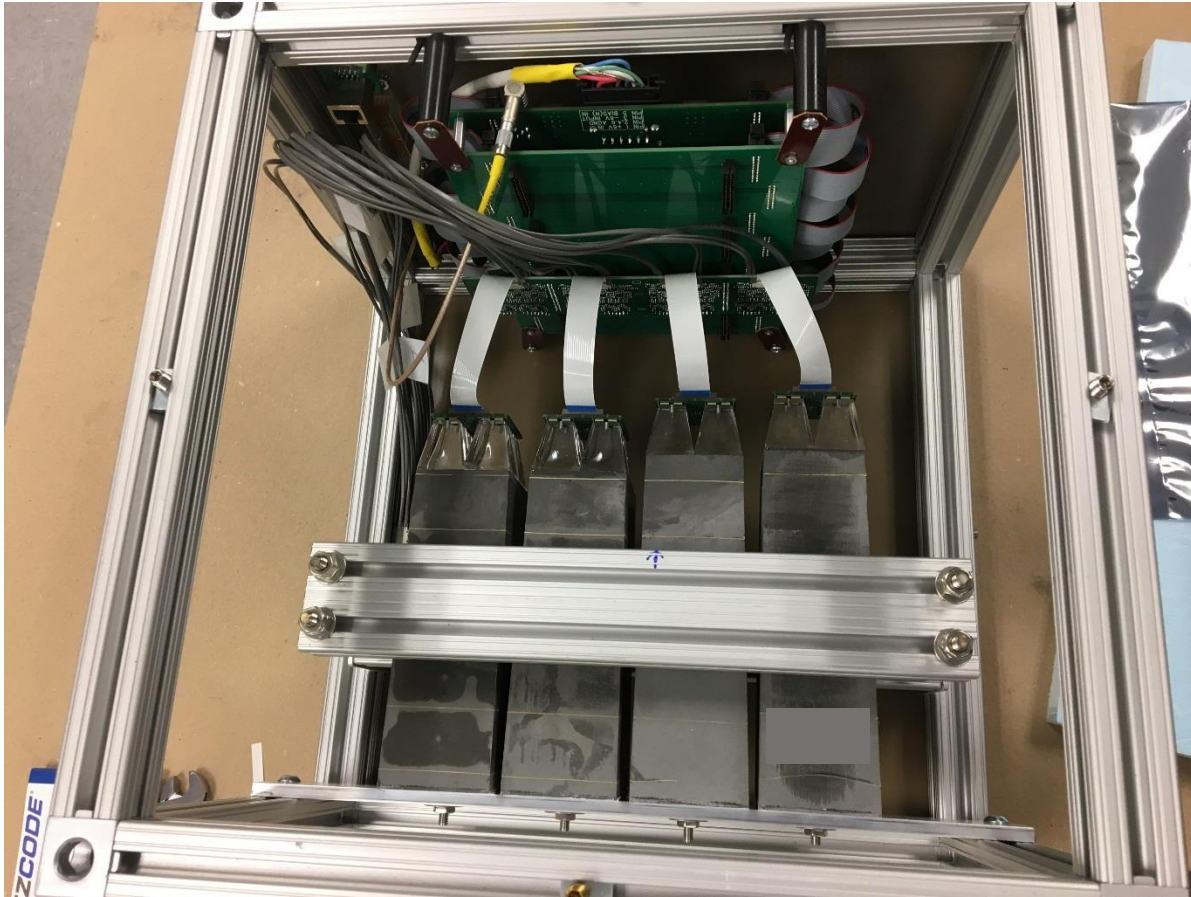
For comparison of Kuraray SCSF78 and St-Gobain BCF-12 fiber

| HV | HV | equiv | JH | Steve | |
|-----------|-----------|---------|---------|-------------------|--|
| for gain= | for gain= | tower # | HBD-DAQ | controller ch #'s | |
| 2.30E+05 | 1.15E+05 | | CH # | | |
| 69.19 | 68.21 | 61 | 19 | 16 | |
| 69.19 | 68.21 | 60 | 18 | 17 | |
| 69.21 | 68.23 | 53 | 17 | 18 | |
| 69.20 | 68.22 | 52 | 16 | 19 | |
| 69.37 | 68.39 | 45 | 23 | 20 | |
| 69.36 | 68.37 | 44 | 22 | 21 | |
| 69.40 | 68.42 | 37 | 21 | 22 | |
| 69.38 | 68.40 | 36 | 20 | 23 | |
| 69.32 | 68.34 | 29 | 27 | 24 | |
| 69.30 | 68.32 | 28 | 26 | 25 | |
| 69.34 | 68.35 | 21 | 25 | 26 | |
| 69.33 | 68.34 | 20 | 24 | 27 | |
| 69.10 | 68.12 | 13 | 31 | 28 | |
| 69.08 | 68.10 | 12 | 30 | 29 | |
| 69.11 | 68.13 | 5 | 29 | 30 | |
| 69.11 | 68.12 | 4 | 28 | 31 | |

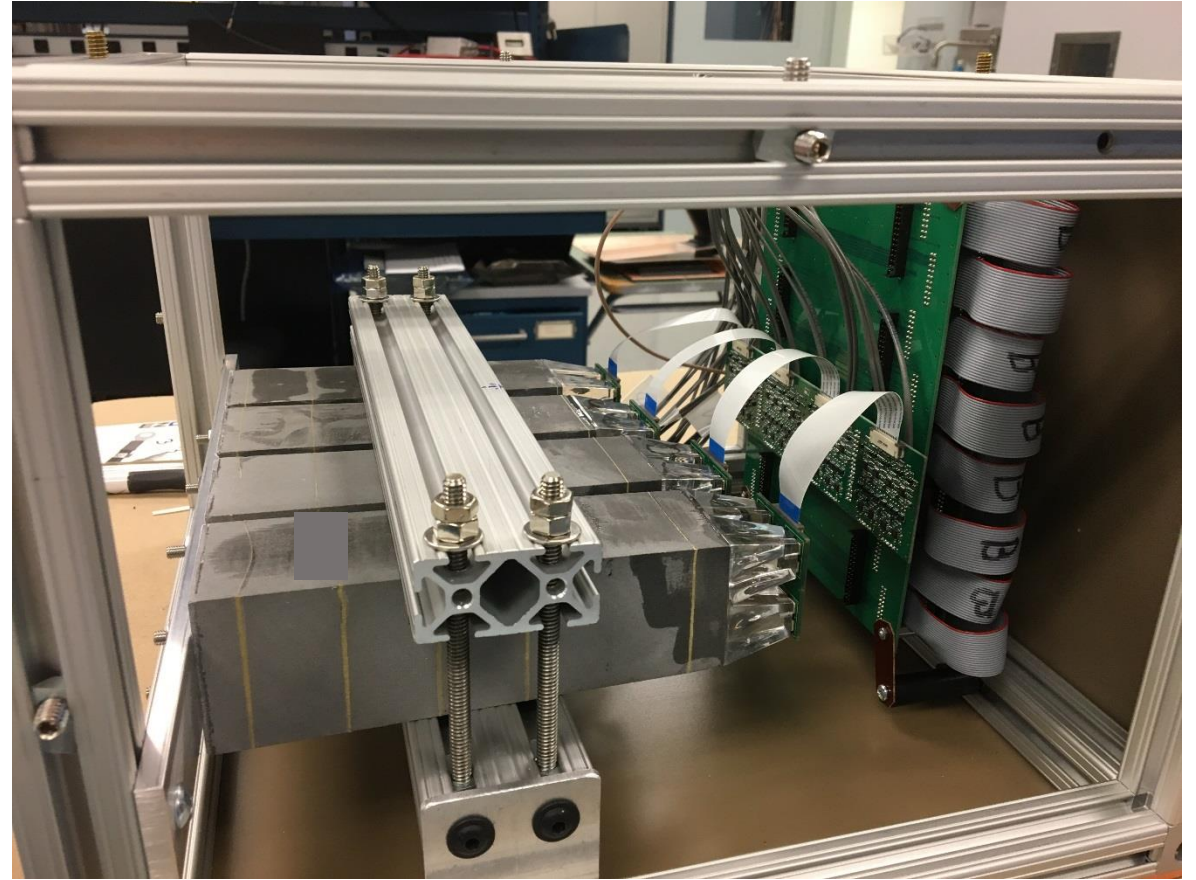
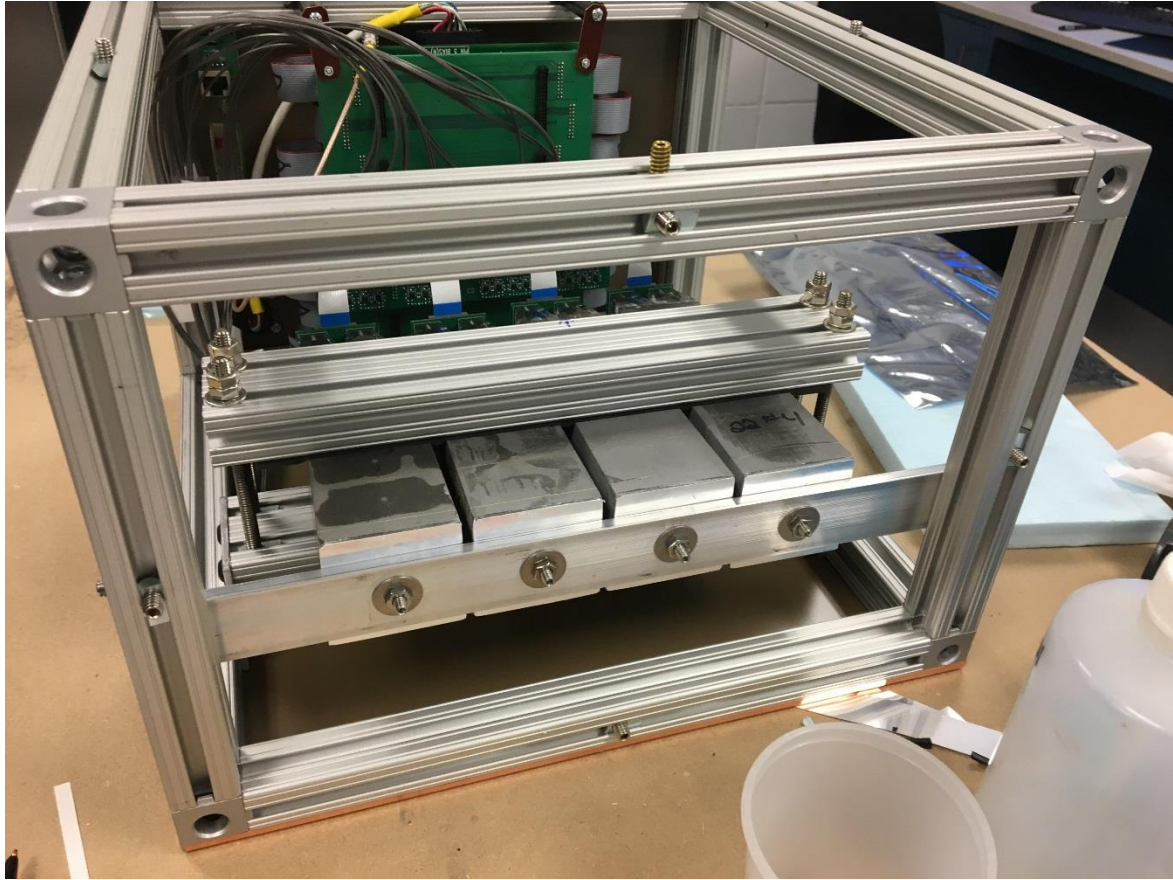
| | | | | | | | |
|----------------------|--|------|--|------|--|------|--|
| (looking downstream) | | | | | | | |
| HBD ch #'s | | | | | | | |
| 1816 | | 2220 | | 2624 | | 3028 | |
| 1917 | | 2321 | | 2725 | | 3129 | |
| 22-4 | | 21-2 | | SG2 | | SG1 | |
| Controller ch #'s | | | | | | | |
| 1719 | | 2123 | | 2527 | | 2931 | |
| 1618 | | 2022 | | 2426 | | 2830 | |
| 22-4 | | 21-2 | | SG2 | | SG1 | |

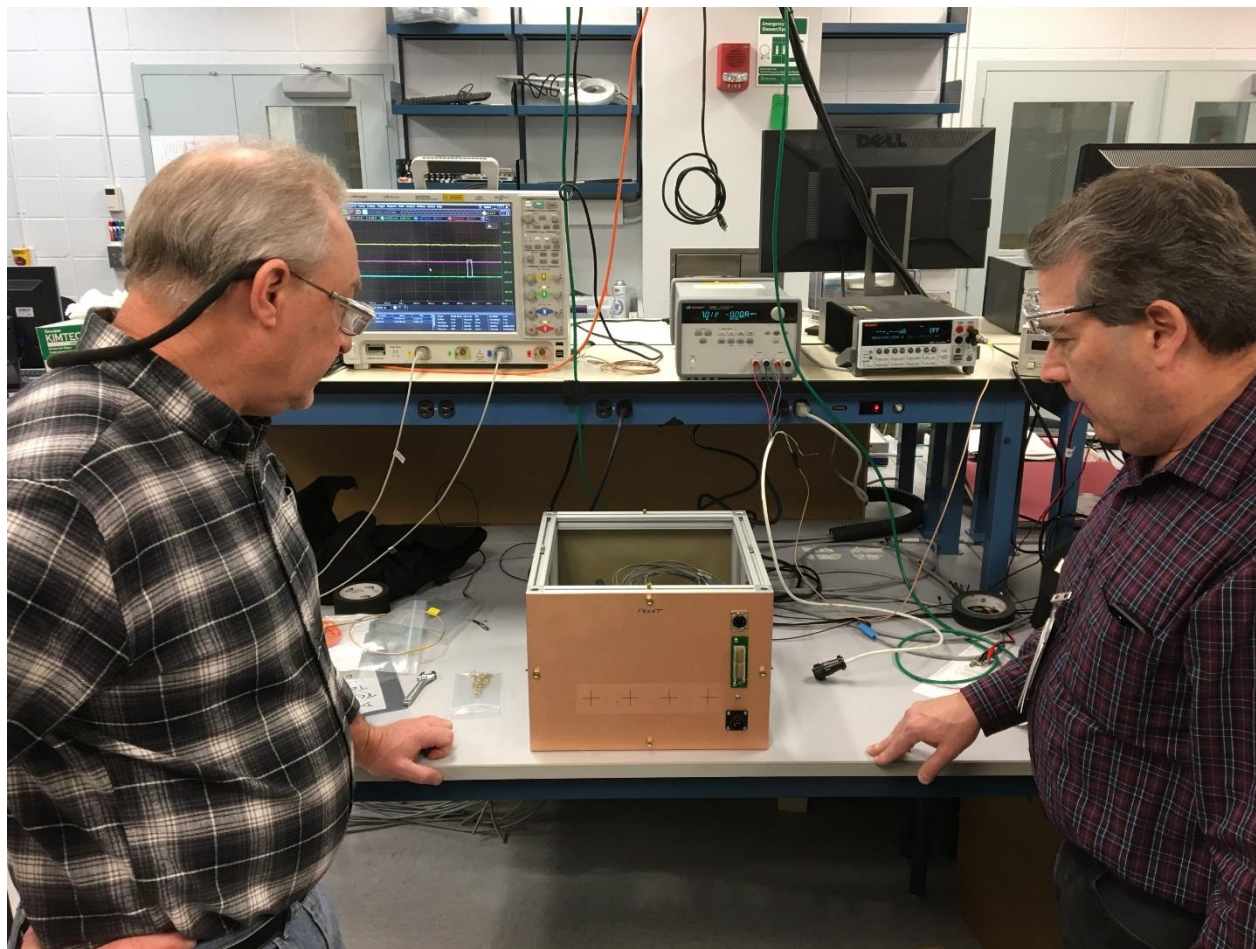


Orientation: like EMC3, but laying on its side.



One preamp board plugged into 2nd slot,
So these channels are the equiv of 16-31 in EMC3





Density of EMC3 blocks

| Block # | Density (g/cc) |
|-----------|-----------------|
| 19-1 | 10.07 |
| 19-2 | 10.00 |
| 19-3 | 9.92 |
| 19-4 | 9.85 |
| | |
| 20-1 | 9.74 |
| 20-2 | 9.63 |
| 20-3 | 9.97 (not used) |
| 20-4 | 9.74 |
| 20-3R | 10.09 |
| | |
| 21-1 | 9.83 |
| 21-2 | 9.75 (not used) |
| 21-3 | 9.61 |
| 21-4 | 9.78 |
| 21-2R | 10.08 |
| | |
| 22-1 | 9.78 |
| 22-2 | 9.73 |
| 22-3 | 9.80 |
| 22-4 | 9.56 (not used) |
| 22-4R | 9.92 |
| | |
| made with | |
| SG 19-1 | 9.23 |
| SG 19-2 | 9.11 |

| | |
|----------------|----------------------------|
| AVG | 9.83 (not incl StG blocks) |
| MAX | 10.09 |
| min | 9.56 |
| std dev | 0.163 |
| std dev/mean | 0.017 |
| (MAX-min)/mean | 0.054 |

| | | | | |
|----------------|-------|-------|--------|--------|
| | EMC3 | | | |
| block # | 19-1 | 20-4 | 21-2R | 22-4R |
| density (g/cc) | 10.07 | 9.74 | 10.08 | 9.92 |
| | | | | |
| | 19-2 | 20-3R | 21-1 | 22-2 |
| | 10.00 | 10.09 | 9.83 | 9.73 |
| | | | | |
| | 19-4 | 20-1 | 21-3 | 22-3 |
| | 9.85 | 9.74 | 9.61 | 9.80 |
| | | | | |
| | 19-3 | 20-2 | 21-4 | 22-1 |
| | 9.92 | 9.63 | 9.78 | 9.78 |
| | | | | |
| | | | | |
| | | | | |
| | EMC4 | | | |
| block # | 22-4 | 21-2 | 19-SG2 | 19-SG1 |
| density (g/cc) | 9.56 | 9.75 | 9.11 | 9.23 |
| | | | | |